

The present claimed invention relates to an optoelectronic device comprising optical interconnects formed from a sol-gel material. In the past, the use of a sol-gel material to provide a flexible optical interconnect device was limited to a passive material. In the present invention an active region is defined in the sol-gel based material. In contrast to the prior art silica-based base materials, the dopant ions do not chemically bond with the base material. The active region is accomplished because rather than being clustered or chemically bonded, the rare earth ions are dispersed within the sol-gel base material. Clustering of the ions would not allow the easy transfer of energy within the optical interconnect. The rare earth ions are enclosed or "caged" in a tris (8-hydroxyquinoline) molecule, referred to as the "Q" form of the rare earth element. In such a caged form, the rare earth ions appear to be physically bigger in size and are easier to activate to facilitate the transfer of energy when subjected to photon bombardment.

Heming et al disclose a process for producing a high-refractive index optical waveguide with an essentially planar substrate exhibiting high breaking strength. An inorganic waveguide material is applied to the essentially planar substrate, which is made from a synthetic resin or another material having a high organic proportion. Although Heming et al suggest producing an optical base material produced by a sol-gel technique, applicant can find no teaching or suggestion of providing an active region defined within a sol-gel material.

Deacon et al disclose an optical energy transfer device and an energy guiding device that use an electric field to control energy propagation using a class of poled structures in solid material. The invention may be a switchable grating which consists of a poled material with an alternating domain structure of a specific period.

Glass et al disclose an optically active medium, wherein the absorption properties can be changed drastically by a Fabry-Perot microcavity. Erbium-implanted SiO_2 may be used as the optically active medium. The structure can be used for optically pumped semiconductor devices.

Feldman et al disclose an optical device with a Fabry-Perot microcavity formed by two reflective mirrors and an active layer that is doped with a rare earth element from the Lanthanide series. The fundamental mode of the cavity is in resonance with the emission wavelength of the selected rare earth element. The three secondary prior art references teach vertical cavity type devices, which may be erbium doped and do have an active area. However, there is no disclosure or suggestion of a planar waveguide or an optical interconnect. In addition, there is no suggestion of a sol-gel base material having an active area.

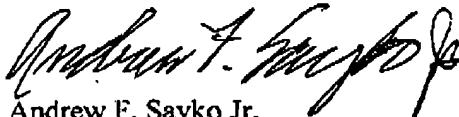
It is the examiner's position that "Heming et al disclose the gist of the invention" and that the claims are unpatentable over the cited references. Applicant has been unable to find any reference or suggestion in any of the cited prior art to "a sol-gel based material including an active region defined in the sol-gel based material" or to the use of a dopant to create an active region within the sol-gel base material.

Applicant would appreciate the examiner's assistance in pointing out the specific portions of the cited references he is relying upon in reaching his conclusions. Applicant was unable to find any specific disclosures in the cited prior art to support the examiner's conclusions. A general reference to the cited prior art, without citing the relevant columns and line numbers for the disclosures relied upon by the examiner, makes it extremely difficult to adequately assess the examiner's rejections and the reasoning upon which they are based. A specific citation of the relevant portions of the cited prior art would allow applicant the opportunity to discuss the applicability or non-applicability of these specific citations to the patentability of the claimed invention.

CONCLUSION

In view of the above arguments and the previous amendments to the claims, it is submitted that the claims should be in condition for allowance. The issuance of a Notice of Allowance is, therefore, respectfully requested. The examiner is encouraged to contact the undersigned attorney at (908) 612-0519 to discuss any remaining issues, in order to expedite the examination of the present patent application.

Respectfully submitted,




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CERTIFICATE OF TRANSMISSION (37 CFR 1.8a AND 1.10)

I hereby certify that this correspondence (6 pages) is, on the date shown below, being transmitted by facsimile to the United States Patent and Trademark Office at Fax number 703-872-9306 (Art Unit 2874).

Andrew F. Sayko Jr.: 

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